

CLAIMS

What is claimed is:

1. An uncured pigmented layer for use as the top coat layer in a panel assembly that includes a core and at least one face sheet attached to said core, said face sheet including a composite layer that is formed by curing an uncured prepreg at a cure temperature for a sufficient time to form said face sheet and wherein said uncured pigmented layer is attached to the uncured prepreg without an adhesive, said uncured pigmented layer comprising:

an uncured pigmented binder resin, said uncured pigmented binder resin comprising an uncured thermoplastic resin and a pigment wherein said thermoplastic resin has a cure temperature that is equal to or less than the cure temperature of said uncured prepreg; and

a substrate on which said pigmented binder resin is located, said substrate having a melting point that is above the cure temperature of said prepreg.

2. An uncured pigmented layer according to claim 1 wherein said substrate comprises a textile substrate and/or a thermoplastic film substrate.

3. An uncured pigmented layer according to claim 1 wherein said uncured thermoplastic resin present in said uncured pigmented binder is polyvinyl butyral.

4. An uncured pigmented layer according to claim 1 wherein said uncured thermosetting resin present in said prepreg is selected from the group consisting of phenolic resole, phenolic novalac and flame retardant epoxy.

5. An uncured pigmented layer according to claim 4 wherein said uncured pigmented binder is polyvinyl butyral.

6. An uncured pigmented layer according to claim 2 in which said substrate comprises a thermoplastic film substrate comprising polyethylene terephthalate.

7. An uncured pigmented layer according to claim 2 wherein said textile substrate comprises a textile selected from the group consisting of glass fabric and polyester matt.

8. An uncured pigmented layer according to claim 6 wherein said thermoplastic film substrate comprising polyethylene terephthalate is between about 36 and 50 microns thick.

9. An uncured pigmented layer according to claim 1 wherein said pigment comprises titanium dioxide.

10. An uncured pigmented layer according to claim 9 wherein said uncured thermoplastic resin present in said uncured pigmented binder comprises polyvinyl butyral, said uncured thermosetting resin present in said prepreg is selected from the group consisting of phenolic resole, phenolic novalac and flame retardant epoxy and said substrate comprises a thermoplastic film substrate comprising polyethylene terephthalate.

11. An uncured panel assembly comprising a:
a core having a first and a second surface, said first and second surfaces being located on opposite sides of said core and defining the thickness of said core;
at least one uncured prepreg located on at least one of said first or second surfaces of said core, said uncured prepreg having an outer surface and an inner surface, said inner surface being adjacent to said core first or second surface and said uncured prepreg comprising a thermosetting resin that has a cure temperature; and
an uncured pigmented layer attached directly to the outer surface of said uncured prepreg, said uncured pigmented layer comprising:
an uncured pigmented binder resin, said uncured pigmented binder resin comprising an uncured thermoplastic resin and a pigment wherein said thermoplastic resin has a cure temperature that is equal to or less than the cure temperature of said uncured thermosetting resin present in said prepreg; and
a substrate on which said pigmented binder resin is located, said substrate having a melting point that is above the cure temperature of said prepreg.

12. An uncured panel assembly according to claim 11 wherein said core comprises honeycomb.

13. An uncured panel assembly according to claim 10 wherein said uncured thermoplastic resin present in said uncured pigmented binder is polyvinyl butyral.

14. An uncured panel assembly according to claim 10 wherein said uncured thermosetting resin present in said uncured prepreg is selected from the group consisting of phenolic resole, phenolic novalac and flame retardant epoxy.

15. An uncured panel assembly according to claim 10 in which said substrate comprises a textile substrate and/or a thermoplastic film substrate.

16. An uncured panel assembly according to claim 15 wherein said thermoplastic film substrate is a film comprising polyethylene terephthalate.

17. An uncured panel assembly according to claim 16 wherein said film comprising polyethylene terephthalate is between about 36 and 50 microns thick.

18. An uncured panel assembly according to claim 15 wherein said textile substrate comprises a textile selected from the group consisting of glass fabric and polyester matt.

19. An uncured panel assembly according to claim 10 wherein said pigment comprises titanium dioxide.

20. An uncured panel assembly according to claim 19 wherein said uncured thermoplastic resin present in said uncured pigmented binder comprises polyvinyl butyral, said uncured thermosetting resin present in said prepreg is selected from the group consisting of phenolic resole, phenolic novalac and flame retardant epoxy and said substrate comprises a thermoplastic film substrate comprising polyethylene terephthalate.

21. A panel assembly comprising an uncured panel assembly according to claim 10 that has been heated to a processing temperature that is equal to or above the cure temperature for said thermosetting resin for a sufficient time to cure both said thermosetting resin in said prepreg and said thermoplastic resin present in said pigmented binder, said processing temperature being below the melting point of said substrate and wherein said thermoplastic film substrate, if any, has been removed from said panel assembly.

22. A method for making an uncured pigmented panel assembly, said method comprising the steps of:

providing a core having a first and a second surface, said first and second surfaces being located on opposite sides of said core and defining the thickness of said core;

locating at least one uncured prepreg on at least one of said first or second surfaces of said core, said uncured prepreg having an outer surface and an inner surface, said inner surface being located adjacent to said core first or second surface and said uncured prepreg comprising a thermosetting resin that has a cure temperature; and

applying an uncured pigmented layer directly to the outer surface of said uncured prepreg, said uncured pigmented layer comprising an uncured pigmented binder resin, said uncured pigmented binder resin comprising an uncured thermoplastic resin and a pigment wherein said thermoplastic resin has a cure temperature that is equal to or less than the cure temperature of said uncured thermosetting resin present in said prepreg.

23. A method for making an uncured pigmented panel assembly according to claim 21 wherein said uncured pigmented layer comprises a substrate on which said pigmented binder resin is located, said substrate having a melting point that is above the cure temperature of said prepreg.

24. A method for making an uncured pigmented panel assembly according to claim 22 wherein said core comprises honeycomb.

25. A method for making an uncured pigmented panel assembly according to claim 22 wherein said uncured thermoplastic resin present in said uncured pigmented binder is polyvinyl butyral.

26. A method for making an uncured pigmented panel assembly according to claim 22 wherein said uncured thermosetting resin present in said uncured prepreg is selected from the group consisting of phenolic resole, phenolic novalac and flame retardant epoxy.

27. A method for making an uncured panel assembly according to claim 23 in which said substrate comprises a textile substrate and/or a thermoplastic film substrate.

28. A method for making an uncured panel assembly according to claim 27 wherein said substrate comprises a thermoplastic film substrate comprising polyethylene terephthalate.

29. A method for making an uncured panel assembly according to claim 28 wherein said film comprising polyethylene terephthalate is between about 36 and 50 microns thick.

30. A method for making an uncured panel assembly according to claim 21 wherein said pigment comprises titanium dioxide.

31. A method for making an uncured panel assembly according to claim 23 wherein said pigment comprises titanium dioxide, said uncured thermoplastic resin present in said uncured pigmented binder comprises polyvinyl butyral, said uncured thermosetting resin present in said prepreg is selected from the group consisting of phenolic resole, phenolic novalac and flame retardant epoxy and said substrate comprises a thermoplastic film substrate comprising polyethylene terephthalate.

32. A method according to claim 22 that includes the additional steps of heating said uncured panel assembly to a processing temperature that is equal to or above the cure temperature for said thermosetting resin for a sufficient time to cure both said thermosetting resin in said prepreg and said thermoplastic resin present in said pigmented binder to form a cured panel assembly.

33. A method according to claim 23 that includes the additional step of heating said uncured panel assembly to a processing temperature that is equal to or above the cure temperature for said thermosetting resin for a sufficient time to cure both said thermosetting resin in said prepreg and said thermoplastic resin present in said pigmented binder to form a cured panel assembly, wherein said processing temperature is below the melting point of said substrate and said thermoplastic film substrate, if any, is removed from said cured panel assembly.